The Claims

5 1. A glass sheet intended to be thermally toughened, comprising a silica-soda matrix, wherein said sheet has an expansion coefficient α of greater than $100 \times 10^{-7}\ K^{-1}$, a Young's modulus E of greater than 60 GPa and a thermal conductivity k of less than 0.9 W/m.K.

10 2. The glass sheet of claim 1, wherein said sheet has a Poisson's ratio of greater than 0.21.

  3. The glass sheet of claim 2, wherein said sheet has a specific heat of greater than 7.40 J/kg.K.

15 4. The glass sheet of claim 1, wherein said sheet has a specific heat of greater than 7.40 J/kg.K.

  5. The glass sheet of claim 1, wherein said sheet has a density of greater than 20 2520 kg/m^3.

  6. The glass sheet of claim 1, wherein said sheet satisfies the relationship:

$$\alpha \cdot E / K > 8000.$$

25 7. The glass sheet of claim 1, wherein said matrix comprises, in percentages by weight, the following constituents:

SiO_2	45-69%
Al_2O_3	0-14%
CaO	0-22%
MgO	0-10%
Na_2O	6-24%

K$_2$O	0-10%
BaO	0-12%
B$_2$O$_3$	0-6%
ZnO	0-10%

and satisfies the relationships:

$$Na_2O + K_2O > 20\%$$

$$Na_2O + K_2O + CaO > 27\%.$$

8.   The glass sheet of claim 1, wherein said matrix comprises, in percentages by weight, the following constituents:

SiO$_2$	45-69%
Al$_2$O$_3$	0-14%
CaO	0-22%
MgO	0-10%
Na$_2$O	6-24%
K$_2$O	0-10%
BaO	0-12%
B$_2$O$_3$	0-6%
ZnO	0-10%

and satisfies the relationships:

$$Na_2O + K_2O > 17\%$$

$$Na_2O + K_2O + CaO > 35\%.$$

9.   The glass sheet of claim 1, wherein said matrix comprises, in percentages by weight, at least one of Na$_2$O and K$_2$O in amounts which satisfy the following relationship:

$$Na_2O + K_2O > 17\%.$$

10.   The glass sheet of claim 1, wherein said matrix comprises, in percentages by weight, the following constituents:

SiO$_2$	45-69%

Al_2O_3	0-14%
CaO	0-22%
MgO	0-10%
Na_2O	6-24%
K_2O	0-10%
BaO	0-12%
B_2O_3	0-6%
ZnO	0-10%

and satisfies the relationships:

(a) $Na_2O + K_2O > 17\%$, and

(b) $Na_2O + K_2O + CaO > 29\%$ when at least one of $Na_2O > 18\%$, $K_2O > 5\%$, and $Al_2O_3 < 3\%$.

11. The glass sheet of claim 9, wherein said matrix comprises, in percentages by weight, at least one of TiO_2 and Al_2O_3 in amounts which satisfy the relationship:

$$TiO_2 + Al_2O_3 < 3\%.$$

12. The glass sheet of claim 1, wherein said matrix comprises, in percentages by weight, at least one of Na_2O, K_2O, CaO, and Al_2O_3 in amounts which satisfy the following relationships:

(a) $Na_2O + K_2O > 17\%$, and

(b) $Na_2O + K_2O + CaO > 29\%$ when at least one of $Na_2O > 18\%$, $K_2O > 5\%$, and $Al_2O_3 < 3\%$.

13. The glass sheet according to claim 1, wherein said sheet has a thickness of less than 2.5 mm and is thermally toughened.

14. The glass sheet of claim 1, wherein said matrix comprises Na_2O and optionally one or more of K_2O, CaO or Al_2O_3 in amounts which satisfy the following relationship:

$$Na_2O + K_2O + CaO > 29 \text{ wt}\%$$

when at least one of $Na_2O > 18$ wt%, $K_2O > 5$ wt%, and $Al_2O_3 < 3$ wt%.

15.   The glass sheet of claim 1, wherein said matrix has a CaO content of 10.4 to 22 wt%.

16.   A glass sheet intended to be thermally toughened, comprising a silica-soda matrix, wherein said sheet has an expansion coefficient α of greater than 100×10^{-7} K^{-1}, a Young's modulus E of greater than 60 GPa and a thermal conductivity k of less than 0.9 W/m.K and said matrix has a SiO_2 content of 45 to 65 wt%, wherein said matrix comprises Na_2O and optionally K_2O in amounts which satisfy the following relationship:

$$Na_2O + K_2O > 20 \text{ wt\%}.$$

17.   A glass composition comprising, in percentages by weight:

SiO_2	45-69%
Al_2O_3	0-14%
CaO	0-22%
MgO	0-10%
Na_2O	6-24%
K_2O	0-10%
BaO	0-12%
B_2O_3	0-6%
ZnO	0-10%,

wherein the glass has a viscosity η in poise, a forming temperature at which log η=3.5, and a liquidus temperature which is less than or equal to the forming temperature.
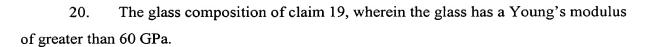
18.   The glass composition of claim 17, wherein the liquidus temperature is between 10°C and 30°C less than the forming temperature.

19.   The glass composition of claim 18, wherein the glass has an expansion coefficient of greater than 100×10^{-7} K^{-1}.

20.   The glass composition of claim 19, wherein the glass has a Young's modulus of greater than 60 GPa.

21.   The glass composition of claim 19, wherein the glass has a thermal
5   conductivity of less than 0.9 W/m.K.